

REMARKS

The Final Office Action, mailed on March 24, 2004, has been reviewed carefully. In connection with an Examiner interview conducted on May 19, 2004 in the above-identified application, the application has been amended in an effort to place the claims in condition for allowance. The amendments herein reflect changes to the claimed language consistent with the Examiner interview. As Applicant indicated to the Examiner in the interview, these Amendments have been filed concurrently with a Request for Continued Examination (RCE). Applicant requests that these Amendments be entered. No new matter is introduced.

Claims 1-86 are pending in this application. Claims 1, 39, 78 and 85 are independent claims. Claims 1-8, 10-15, 17-19, 29-32, 39-47, 49-54, 56-58, 68-70, 78-80, 83 and 85 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,408,405 issued to Mozumder et al. ("Mozumder"). Claims 9, 34, 48, and 72 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder. Claims 16, 55 and 81 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 5,457,625 issued to Lim et al. Claims 20-26, 35-37, 59-65, 73-75 and 82 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 5,042,752 issued to Surauer et al. Claims 27-28 and 66-67 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 3,934,124 issued to Gabriel. Claims 33 and 71 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 5,546,312 issued to Mozumder et al. ("Mozumder '312"). Claims 38 and 76 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 3,534,400

issued to Dahlin. Claims 77, 84 and 86 have been rejected under 35 U.S.C. § 103(a) as obvious in light of Mozumder in view of U.S. Patent No. 6,587,744 issued to Stoddard et al.

Independent claims 1, 39, 78 and 85 have been amended to better claim the invention. These amendments find support in at least Page 13 of the original Specification. No new matter is introduced.

The Mozumder reference cited in the Office Action mailed March 24, 2004 relates to the control of process variables in a discrete system, where the output qualities of semiconductor wafers is measured at intervals. The present application relates to dynamic modeling of a continuous process system.

In rejecting Claim 1 under 35 U.S.C. § 102, the Examiner cites the use of intermediate variables that “are transformations on the input variables” (Mozumder Column 6, lines 28-63) as disclosing the claim limitation of “the shadow system controlled variables that are mathematically and functionally equivalent to system manipulated variables, to control the process system.”

The Applicant’s invention relates to the augmentation of an initial model using “shadow system variables” that are “essentially copies of the input” manipulated variables. As stated on Page 13 of the Specification, each shadow system variable has no other model curves except against its own manipulated variables. This allows for large independent step changes in one shadow CV, enabling perpendicular step testing by removing correlation between the manipulated variables. This ensures an easy system identification problem, particularly if Finite Impulse Response (FIR) model identification is used, as each shadow system variable maps out to a single manipulated variable.

In contrast, Mozumder's use of intermediate variables does not control the subject process system with large independent step changes in one shadow system variable at a time. Rather Mozumder deals with the issues of variable dependency and correlation through the use of "local experiment design." Col 5, line 65 - Col 6, line 24. Thus, the system and method of Mozumder does no provide, and hence Monzumder does not imply or suggest, the claimed independent step changes in one shadow system variable at a time.

In order to clarify these distinctions over the cited art, independent claims 1, 39, 78 and 85 have been amended to indicate and further describe the shadow system variables as corresponding to a respective manipulated variable. Support for these amendments may be found at least in the Specification at Page 13. All of the remaining claims have been amended through dependency. None of the other cited references add to Mozumder the claimed independent step changes in one shadow system variable at a time as in the present invention. Thus, no combination of the references makes obvious the present invention now claimed in Claims 1-86.

Applicant respectfully submits that all claims are in condition for allowance. Favorable action is respectfully submitted.

**CONCLUSION**

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By \_\_\_\_\_  
F. James Coe  
Registration No. 46,630  
Telephone: (978) 341-0036  
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 5/24/04